

**FINAL**

## **Smoky Canyon Mine**

### **Pilot Study Work Plan and Sampling and Analysis Plan**

**Biological Selenium Removal Treatment Technology  
Fluidized Bed Bioreactor**

**Final – September 2014**

**Final Addendum 01 – July 2015**

Prepared for:



**J.R. Simplot Company**  
Smoky Canyon Mine  
1890 Smoky Canyon Mine Road  
Afton, WY 83110

P.O. Box 912  
1130 West Highway 30  
Pocatello, ID 83204

Prepared by:



2500 55th Street, Suite 200  
Boulder, Colorado 80301

## TABLE OF CONTENTS

	<u>Page</u>
<b>LIST OF TABLES.....</b>	<b>II</b>
<b>LIST OF APPENDICES.....</b>	<b>II</b>
<b>LIST OF ACRONYMS .....</b>	<b>III</b>
<b>1.0 INTRODUCTION.....</b>	<b>1</b>
<b>2.0 SUPPORTING INFORMATION .....</b>	<b>2</b>
<b>3.0 PILOT STUDY DESIGN.....</b>	<b>3</b>
<b>4.0 DATA QUALITY OBJECTIVES.....</b>	<b>8</b>
<b>5.0 ROLES AND RESPONSIBILITIES.....</b>	<b>9</b>
<b>6.0 SAMPLING AND ANALYSIS PLAN.....</b>	<b>10</b>
6.2 Sampling Design and Methods .....	10
6.2.1 Performance Monitoring Sampling Design and Methods .....	10
6.2.2 Routine Performance Evaluation Sampling .....	10
6.8 Benthic Macroinvertebrate Community Sample Collection .....	11
<b>7.0 DATA ANALYSIS AND REPORTING .....</b>	<b>12</b>
7.1 Data Evaluation .....	12
7.2 Data Validation .....	13
<b>8.0 REFERENCES.....</b>	<b>14</b>

## LIST OF TABLES

<b><u>Table</u></b>	<b><u>Title</u></b>
2-3	Pilot System Design Basis
3-3	Pilot Study Monitoring, Sampling, and Analysis Schedule
3-4	Laboratory Analyses, Methods and Reporting Limits – Full Analytical Suite
3-5	Laboratory Analyses, Methods and Reporting Limits – Focused Analytical Suite (Routine Samples)
3-6	Summary of Sample Preservation and Holding Times

## LIST OF APPENDICES

C	Standard Operating Procedure No. 15 – Benthic Macroinvertebrate Tissue and Community Sampling
---	---

## LIST OF ACRONYMS

BOD	Biochemical Oxygen Demand
CaCO <sub>3</sub>	Calcium Carbonate
COD	Chemical Oxygen Demand
COPC	Chemical of Potential Concern
DO	Dissolved Oxygen
FBR	Fluidized Bed Bioreactor
FS	Feasibility Study
gpm	gallons per minute
MDL	Method Detection Limit
mg/L	milligrams per liter
N	Nitrogen
NTU	Nephelometric Turbidity Unit
ORP	Oxidation-Reduction Potential
QAPP	Quality Assurance Project Plan
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
RL	Reporting Limit
SAP	Sampling and Analysis Plan
TDS	Total Dissolved Solids
TOC	Total Organic Carbon
TSS	Total Suspended Solids
µg/L	micrograms per liter
USFS	U.S. Forest Service

## 1.0 INTRODUCTION

The J.R. Simplot Company (Simplot) previously prepared a Pilot Study Work Plan and Sampling and Analysis Plan (Work Plan/SAP) (Formation, 2014) to describe the procedures for conducting a study of fluidized bed bioreactor (FBR) active biological treatment at South Fork Sage Creek Springs and Hoopes Spring at the Smoky Canyon Phosphate Mine (“mine” or “Site”). The U.S. Forest Service (USFS) approved the September 2014 Pilot Study Work Plan/SAP as final.

The Final Work Plan/SAP provides background information, design basis, design criteria, implementation, sample locations, frequencies, and analyte lists to evaluate system performance. This addendum presents changes to the monitoring frequency and analytes for the FBR Pilot Study based on input from the Agencies in email correspondence through May 6, 2015 and in other discussions. Several other changes are included, as also provided in this addendum.

This addendum provides the same sections as were presented in the Final Work Plan/SAP, with changes noted accordingly, so that this addendum can be used in conjunction with the Final Work Plan/SAP.

## 2.0 SUPPORTING INFORMATION

This section of the Final Work Plan/SAP provides Site background information relevant to the Pilot Study activities, an overview of the FBR module, and specific objectives for the Pilot Study. This addendum does not change the information that was presented in the Final Work Plan/SAP (Formation, 2014). However, the design basis information has been updated and additional parameters have been included in Table 2-3 to be consistent with the contract documentation. The design basis ranges shown in Table 2-3 were used in the design of the pilot study system. During operation of the pilot study, influent and effluent parameters will be evaluated and actions taken, as feasible, to minimize concentration increases from influent to effluent.

**Table 2-3. Pilot System Design Basis and Estimated Effluent Quality**

Parameter	Influent Range	Effluent Range
<b>Design Basis</b>		
Flow	80 – 250 gpm	80 – 250 gpm
Total Selenium	≤ 110 µg/L <sup>a</sup>	≤ 5 µg/L
Biochemical Oxygen Demand <sup>b</sup>	< 2 mg/L	< 10 mg/L
Total Suspended Solids	< 10 mg/L	< 5 mg/L
Total Phosphorus	< 0.1 mg/L	< 0.25 mg/L
Nitrate/Nitrite as N	< 1 mg/L	< 5 mg/L
Ammonia	< 1 mg/L	< 2 mg/L
Nitrate	< 1 mg/L	< 5 mg/L
Turbidity	< 2 NTU	< 2 NTU
Total Sulfide	< 1 mg/L	< 0.1 mg/L
pH	6 – 9	6 – 9
Dissolved Oxygen	Saturation	Saturation
<b>Estimated Effluent Quality</b>		
Sulfate	< 100 mg/L	< 100 mg/L
Total Alkalinity, CaCO <sub>3</sub>	150 – 250 mg/L	> 50 mg/L
Hardness	< 275 mg/L	< 300 mg/L
Total Dissolved Solids	< 350 mg/L	< 400 mg/L
Temperature <sup>c</sup>	9 – 11 °C	8 – 17 °C

**Notes:**

<sup>a</sup> Selenium concentrations in influent water have been observed recently as high as 110 µg/L.

<sup>b</sup> Biochemical oxygen demand (BOD) effluent targets are related to maintaining dissolved oxygen (DO) concentrations in the receiving stream. These effluent limits will be assessed further during the pilot study.

<sup>c</sup> Temperatures at LSS-SP-N were measured 34 times between 2009 and 2013 and ranged from 9.4 – 10.2 °C. Temperatures at HS-C1 were measured 50 times between 2008 and 2013 and ranged from 10.88 – 11.44 °C.

### 3.0 PILOT STUDY DESIGN

This section of the Final Work Plan/SAP provides information on the Pilot Study design including process details, pilot unit preparation, pumping system descriptions, pilot unit operation/monitoring, characterization of investigation-derived waste, and schedule considerations. The pilot unit monitoring requirements are revised, below, from Section 3.3.2 of the Final Work Plan/SAP (Formation, 2014).

Monitoring of water streams in the Pilot Study will include continuous monitoring of flow, pressure, temperature, pH, oxidation-reduction potential (ORP), and dissolved oxygen (DO) using in-line measurement probes. These data will provide the information needed to optimize the operation and performance of the treatment system.

In addition, sample collection and analysis will occur as described in Table 3-3. Samples may also be collected more frequently, as necessary, to characterize changes in performance due to system adjustments. The analyses and methods for the full analytical suite and the focused analytical suite are shown in Table 3-4 and Table 3-5, respectively.

**Table 3-3. Pilot Study Monitoring, Sampling, and Analysis Schedule (revised July 2015)**

Week (System Status)	Sampling Frequency	Sampling Locations	Analyses to be Performed <sup>a</sup>
Week 0 <sup>b</sup> (Initial Steady State Flow After Start Up)	One-time	Influent, effluent FBR effluent	Full analytical suite <sup>c</sup>
Week 1 <sup>b</sup> (Operational)	Weekly	Influent, effluent	Full analytical suite <sup>c</sup>
Week 2 (Operational)	Weekly	Influent, effluent	Focused analytical suite <sup>d</sup>
Week 3 (Operational)	Weekly	Influent, effluent	Full analytical suite <sup>c</sup>
Week 4 (Operational)	Weekly	Influent, effluent	Focused analytical suite <sup>d</sup>
Review the results from Weeks 0-4. Simplot and the Agencies will discuss identification of interim water quality target parameters depending on how the system is operating. With justification, some of the parameters in the full analytical suite will be eliminated based on the results from Weeks 0-4. <sup>e</sup>			
Week 5 (Operational)	Weekly	Influent, effluent	Full analytical suite <sup>c</sup>
Week 6 (Operational)	Weekly	Influent, effluent	Focused analytical suite <sup>d</sup>
Week 7 (Operational)	Weekly	Influent, effluent	Full analytical suite <sup>c</sup>
Week 8 (Operational)	Weekly	Influent, effluent	Focused analytical suite <sup>d</sup>
Week 9 (Operational)	Weekly	Influent, effluent	Full analytical suite <sup>c</sup>
Week 10 (Operational)	Weekly	Influent, effluent	Focused analytical suite <sup>d</sup>
Week 11 (Operational)	Weekly	Influent, effluent	Full analytical suite <sup>c</sup>
Week 12 (Operational)	Weekly	Influent, effluent	Focused analytical suite <sup>d</sup>
Review and statistically evaluate the results from Weeks 0-12. Simplot and the Agencies will discuss refinement of the interim water quality target parameters. With justification, some of the parameters in the full analytical suite may be eliminated based on the results from Weeks 0-12 <sup>e</sup> . Furthermore, upon receipt of results from Weeks 0-12, Simplot will calculate expected water quality concentrations at key locations downstream of the treatment facility for discussion with the Agencies.			
Week 14 and every other week thereafter (Operational)	Bi-weekly	Influent, effluent	Focused analytical suite <sup>d</sup>
Once per quarter (quarterly sample also meets requirement for bi-weekly sample)	Quarterly	Influent, effluent	Full analytical suite <sup>c</sup>
Operational – Immediately Prior to Shut Down	One-time	Influent, effluent FBR effluent	Full analytical suite <sup>c</sup>

**Notes:**

<sup>a</sup> All lab turnaround times are “standard” (2 to 3 weeks).

<sup>b</sup> “Week 0” is the period immediately after start up, “Week 1” is approximately one week after startup, etc.

<sup>c</sup> Refer to Table 3-4 for list of analyses and methods; some parameters may be eliminated from the full analytical suite after Week 4 and after Week 12, based on review of results for these periods. Any refinements/reductions to the full analytical suite will be implemented after approval by the Agencies.

<sup>d</sup> Refer to Table 3-5 for list of analyses and methods for the focused analytical suite.

<sup>e</sup> Note that the evaluation will be available 4 to 6 weeks after sample collection to allow for the standard lab turnaround time of 2 to 3 weeks and subsequent evaluation.



**Table 3-4. Laboratory Analyses, Methods and Reporting Limits – Full Analytical Suite (revised July 2015)**

Laboratory Analyses	Method	Reporting Limit (RL) <sup>1</sup> (mg/L)
Alkalinity, as CaCO <sub>3</sub>	SM 2320B	1
Aluminum, total and dissolved	EPA 6010C	0.1
Ammonia as N	SM 4500 NH <sub>3</sub> G	0.03
Antimony, total and dissolved	EPA 6020A	0.003
Arsenic, total and dissolved	EPA 6020A	0.003
Barium, total and dissolved	EPA 6020A	0.001
Beryllium, total and dissolved	EPA 6020A	0.0002
Biochemical Oxygen Demand	EPA 405.1	2
Boron, total and dissolved	EPA 6020A	0.05
Cadmium, total and dissolved	EPA 6020A	0.0002
Calcium, dissolved	EPA 6020A	0.05
Chemical Oxygen Demand	EPA 410.4	5
Chloride	EPA 300.0	0.2
Chromium, total and dissolved	EPA 6020A	0.0015
Cobalt, total and dissolved	EPA 6020A	0.001
Copper, total and dissolved	EPA 6020A	0.001
Fluoride	EPA 300.0	0.1
Hardness	SM 2340B (by calculation)	0.1
Iron, total and dissolved	EPA 6010C	0.06
Lead, total and dissolved	EPA 6020A	0.003
Magnesium, dissolved	EPA 6010C	0.10
Manganese, total and dissolved	EPA 6020A	0.001
Mercury, total and dissolved	EPA 7470A	0.0002
Molybdenum, total and dissolved	EPA 6020A	0.001
Nickel, total and dissolved	EPA 6020A	0.001
Nitrate+Nitrite as N	EPA 353.2	0.05
Nitrate, as N	EPA 300.0	0.05
Total Phosphorus	SM 4500 PE	0.01
Potassium, dissolved	EPA 6010C	0.5
Selenium, total and dissolved	EPA 6020A	0.003
Selenate and selenite, dissolved <sup>2</sup>	IC-ICP-DRC-MS	0.003 and 0.003
Organic selenium species (dimethyl selenide and dimethyl diselenide) <sup>2</sup>	HPLC-ICP-DRC-MS	0.001 and 0.0015
Silver, total and dissolved	EPA 6020A	0.0001
Sodium, dissolved	EPA 6010C	0.5
Sulfate	EPA 300.0	1.0
Total Sulfide	SM 4500-S-F	1
Thallium, total and dissolved	EPA 6020A	0.001

Laboratory Analyses	Method	Reporting Limit (RL) <sup>1</sup> (mg/L)
Total Dissolved Solids (TDS)	SM 2540C	10
Total Organic Carbon (TOC)	SM 5310B	1
Total Suspended Solids (TSS)	SM 2540D	5
Uranium, total and dissolved	EPA 6020A	0.001
Vanadium, total and dissolved	EPA 6020A	0.0015
Zinc, total and dissolved	EPA 6020A	0.005

<sup>1</sup> Each laboratory's method detection limits (MDLs) and RLs may change over time.

<sup>2</sup> Selenium species will be analyzed by a separate laboratory and at a different frequency than the other analytes.

**Table 3-5. Laboratory Analyses, Methods and Reporting Limits – Focused Analytical Suite  
(Routine Samples) (revised July 2015)**

Laboratory Analyses	Method	Reporting Limits (RL) <sup>1</sup> (mg/L)
<b>Routine Monitoring Parameters</b>		
Selenium, dissolved	EPA 6020A	0.003
Selenium, total	EPA 6020A	0.003
Nitrate, as N	EPA 300.0	0.05
Total Phosphorus	SM 4500-P-E	0.01
Total Sulfide	SM 4500-S-F	1

In order to accurately reflect actual operational parameters, all sample collection activities will be conducted when the system is running under stable operating conditions. In addition, samples may be collected during unstable conditions for optimization/troubleshooting. The full analytical suite (Table 3-4) includes all of the Remedial Investigation Chemicals of Potential Concern (RI COPCs) and other parameters needed to evaluate the operation of the system. The focused analytical suite (Table 3-5) provides additional data for tracking selenium, nitrate, total phosphorous, and total sulfide concentrations over time. Sample preservation and holding times will be addressed as specified in Table 3-6. Section 6.0 describes these sampling and analysis activities in greater detail, and identifies individual laboratories performing analyses and specific turnaround times. Together, Section 6.0 of this plan and the Smoky Canyon Mine Remedial Investigation/Feasibility Study (RI/FS) Sampling and Analysis Plan (Formation 2010b), shall serve as the main reference for field and laboratory personnel conducting this work. After the first 12 weeks of monitoring, validation findings will be evaluated to determine if it would be acceptable to change laboratory reporting and data validation to follow the “Smoky Canyon Mine Quality Assurance Project Plan for Environmental Monitoring Activities” (also known as the “Site-Wide QAPP”).

**Table 3-6. Sample Preservation and Holding Times (revised July 2015)**

Analyte	Preservation and Storage <sup>a</sup>	Holding Time (days unless otherwise specified)
Total metals (excluding mercury), Hardness	HNO <sub>3</sub> to pH < 2, Cool at 4°C ± 2°C	180
Total mercury	HNO <sub>3</sub> to pH < 2, Cool at 4°C ± 2°C	28
Dissolved metals (excluding mercury), Hardness	Field filter; HNO <sub>3</sub> to pH < 2, Cool at 4°C ± 2°C	180
Dissolved mercury	Field filter; HNO <sub>3</sub> to pH < 2, Cool at 4°C ± 2°C	28
Ammonia, Total Phosphorus, Nitrate+Nitrite, COD	H <sub>2</sub> SO <sub>4</sub> to pH < 2, Cool at 4°C ± 2°C	28
TOC	H <sub>2</sub> SO <sub>4</sub> to pH < 2 (amber glass vial), Cool at 4°C ± 2°C	28
BOD	Cool at 4°C ± 2°C	2
Chloride, Fluoride, Sulfate	Cool at 4°C ± 2°C	28
Alkalinity	Cool at 4°C ± 2°C	14
TDS, TSS	Cool at 4°C ± 2°C	7
Nitrate, as N	Cool at 4°C ± 2°C	2
Total sulfide	NaOH w/Zinc Acetate, Cool at 4°C ± 2°C	7
Dissolved selenite, selenate	Field filter; Cool at 4°C ± 2°C	2 or as soon as practical

<sup>a</sup> Sufficient ice shall be included in the shipping containers to ensure that samples arrive at the laboratory within the appropriate temperature range.

#### **4.0 DATA QUALITY OBJECTIVES**

This section of the Final Work Plan/SAP provides information on the data quality objectives. This addendum does not change the information that was presented in the Final Work Plan/SAP (Formation, 2014).

## **5.0 ROLES AND RESPONSIBILITIES**

This section of the Final Work Plan/SAP provides information on roles and responsibilities for Pilot Study activities. This addendum does not change the information that was presented in the Final Work Plan/SAP (Formation, 2014).

## **6.0 SAMPLING AND ANALYSIS PLAN**

This section of the Final Work Plan/SAP provides information related to sampling and analysis for the Pilot Study. This addendum does not change the information that was presented in the Final Work Plan/SAP (Formation, 2014) except for Section 6.2 which has been revised and is provided in its entirety, below, and a new Section 6.8 that covers benthic macroinvertebrate community sample collection downstream from the Pilot Study at established surface water monitoring location HS-3.

### **6.2 Sampling Design and Methods**

In order to address the data quality objectives described in Section 4.0, water samples will be collected before, during, and after operation of the pilot treatment system. Waste samples will be collected at the completion of the Pilot Study. These sampling activities are described separately below.

#### **6.2.1 Performance Monitoring Sampling Design and Methods**

System performance will be monitored through routine collection and analysis of samples from three points in the treatment process:

1. Influent;
2. FBR discharge; and
3. Effluent.

The samples will be analyzed for monitoring parameters listed in Table 3-4 and Table 3-5, as described in greater detail in the next section, to evaluate the system's overall performance in achieving specific water treatment objectives described in Section 4.0.

#### **6.2.2 Routine Performance Evaluation Sampling**

Routine performance monitoring samples will be collected every week from Weeks 1-12 after starting the treatment system (Week 0) (Table 3-3). Samples collected on odd-numbered weeks (Weeks 1, 3, 5, etc.) will be analyzed for the full analytical suite (Table 3-4) and samples collected on even-numbered weeks will be analyzed for the focused analytical suite (Table 3-5). Analyses for the full analytical suite will be performed by SVL Analytical or IAS EnviroChem, whereas analyses for the focused analytical suite will be performed by IAS EnviroChem. All samples will be analyzed with a standard turnaround time. In addition to these analyses for the

weekly samples, samples collected during Weeks 4, 8, and 12 will be analyzed for selenium speciation by Brooks Rand Labs LLC (merged recently with Applied Speciation and Consulting).

The weekly sampling frequency will be revised after review of results from sample collection in Weeks 0-12, based on discussions with the Agencies. Furthermore, the full analytical suite and/or focused analytical suite may be revised based on reviews of the monitoring results for Weeks 0-4 and Weeks 0-12.

For samples to be analyzed for the focused analytical suite, due to the 48-hour hold time for nitrate analyses these samples will be transported via overnight courier to IAS EnviroChem in Pocatello, Idaho within 24 hours of collection. This will allow the lab 24 hours for analyses which will meet the 48-hour hold time.

Contracted laboratories will provide pre-cleaned sample containers and appropriate preservation reagents. Preservation and storage requirements associated with the individual analyses to be performed and the referenced analytical methods are summarized in Table 3-6.

Field parameters, including DO, pH, ORP, temperature, and flow will be measured and recorded. Additional details on collecting field measurements, including calibration and any decontamination procedures, are provided in Section 6.1 and the QAPP (Formation, 2010b).

## **6.8 Benthic Macroinvertebrate Community Sample Collection**

Benthic macroinvertebrates will be collected at established monitoring location HS-3, which is located downstream from the Pilot Study effluent discharge. Community samples will be collected at this location in August 2015 using a Surber sampler or D-ring kick net with the same net mesh size (500µm) as described in JRS SOP No. 15 (Benthic Macroinvertebrate Tissue and Community Sampling) which is provided in Appendix C of this Final Work Plan/SAP; note that this SOP was previously submitted as part of the RI/FS SAP (Formation, 2010b).

Samples collected using a Surber sampler will be collected primarily from shallow riffle habitats. Within the sample ring attached to the Surber sampler, substrates will be disturbed vigorously for each sample to a uniform depth of about 4 inches or as deep as possible given the substrates present. If adequate riffle or shallow flowing water habitats are not available, a D-ring kick net will be used to collect benthic invertebrates in a similar fashion, by disturbing sediments to a depth upstream of the net opening. The D-ring net may also be used in conjunction with Surber samples to gather opportunistic samples from leaf packs, root wads, or deeper pools. Three samples will be collected from each of three locations within the reach (the same riffle if only one is present, or from three different riffle areas). Samples collected via either method will be composited to form the community sample. The sample will be used for taxonomic identification of the species that comprise the sample.

## 7.0 DATA ANALYSIS AND REPORTING

The Final Work Plan/SAP provides information related to data analysis and reporting for the Pilot Study. This addendum does not change the information that was presented in the Final Work Plan/SAP (Formation, 2014) except for two new paragraphs added to Section 7.1 (Data Evaluation) to cover evaluation of benthic macroinvertebrate community data and stream temperature data, and a revision to the last paragraph in Section 7.2 (Data Validation).

### 7.1 Data Evaluation

The new paragraphs added at the end of Section 7.1 are as follows:

After collection of benthic macroinvertebrate community samples at HS-3 in August 2015, the samples will be evaluated and species identified as described in SOP No. 15 (Appendix C). Also, existing macroinvertebrate density and diversity data will be compiled for HS-3 (e.g., IDEQ Stream Macroinvertebrate Index [SMI] values), including data collected from 2006-2008 and in 2010 and at other times. This existing pre-water treatment dataset could be viewed as “baseline” or “pre-water treatment”. The new August data will be compared with previous data to characterize benthic macroinvertebrate density and diversity with time. With this information, any additional needs for data collection and evaluation of benthic macroinvertebrates will be identified.

Stream temperatures are logged as part of streamflow/depth continuous monitoring at a number of stream monitoring locations in the Sage Creek drainage, including locations downstream from the Pilot Study effluent discharge. These data are not collected under this Work Plan/SAP, but will be compiled and evaluated for the following locations: HS-3 (downstream from Hoopes), LSV-2c (Sage Creek downstream from the Hoopes inflow), and LSS (SF Sage Creek). Continuous temperature data are available at HS-3 and LSV-2c, which have been logging temperatures from September to November 2014 and from April 2015 to present. At the LSS flume, temperature data have also been logged continuously from 2009 to present. These datasets provide diurnal temperature data, including maximum and minimum temperatures downstream from Hoopes (HS-3), downstream of Hoopes flow in Sage Creek (LSV-2c), and on South Fork Sage Creek uninfluenced by Hoopes (LSS). After this initial evaluation, temperature data will be downloaded at these locations every two to three months for regular review of temperature trends and evaluation of potential effects of the Pilot Study on fish.



## 7.2 Data Validation

The last paragraph in Section 7.2 is revised as follows:

The tiered data validation approach will be applied for the first 12 weeks of monitoring. At the end of the first 12-week period, validation findings will be evaluated to determine if it would be acceptable to change laboratory reporting and data validation to follow the “Smoky Canyon Mine Quality Assurance Project Plan for Environmental Monitoring Activities” (also known as the “Site-Wide QAPP”). Any change in the level of effort associated with ongoing data validation will be identified by Simplot and proposed to the USFS for approval before adoption under this plan.

## 8.0 REFERENCES

Formation, 2010b. Final Remedial Investigation/Feasibility Study Sampling and Analysis Plan. Smoky Canyon Mine. June 2010 (and including Addenda 01 through 06).

Formation, 2014. Final Pilot Study Work Plan and Sampling and Analysis Plan, Biological Selenium Removal Treatment Technology Fluidized Bed Bioreactor. Smoky Canyon Mine. Prepared for the J.R. Simplot Company. September 5.

## **APPENDIX C**

Standard Operating Procedure No. 15

Benthic Macroinvertebrate Tissue and Community Sampling